Your SELECT statement
s (ferroelectric or perovskite or PZT or PLZT or high(w)dielectric(w)constant) and (steam or wet or water or pyrogenic)(10n)(oxidation or oxidiz? or oxidis?)

Items	File
9	2: INSPEC_1969-2002/Jul W4
2	5: Biosis Previews(R)_1969-2002/Jul W4
3	6: NTIS_1964-2002/Aug W2
14	8: Ei Compendex(R)_1970-2002/Jul W4
2	32: METADEX(R)_1966-2002/Aug B1
30	34: SciSearch(R) Cited Ref Sci_1990-2002/Aug W1
2	35: Dissertation Abs Online_1861-2002/Jun
2	73: EMBASE_1974-2002/Jul W4
5	94: JICST-EPlus_1985-2002/Jun W1
1	95: TEME-Technology & Management_1989-2002/Jul W4
2	96: FLUIDEX_1972-2002/Jul
10	103: Energy SciTec_1974-2002/Jul B1
2	108: Aerospace Database_1962-2002/Jul
20	144: Pascal_1973-2002/Jul W4
3	155: MEDLINE(R)_1966-2002/Jul W4

Status: Break Sent.

?b 2,8,35,94,144
01aug02 12:12:31 User264704 Session D132.2
$5.98 3.417 DialUnits File411
$5.98 Estimated cost File411
$1.08 TELNET
$7.06 Estimated cost this search
$7.07 Estimated total session cost 3.573 DialUnits

SYSTEM:OS - DIALOG OneSearch
File 2:INSPEC 1969-2002/Jul W4
(c) 2002 Institution of Electrical Engineers
***File 2: Alert feature enhanced for multiple files, duplicates** removal, customized scheduling. See HELP ALERT.
File 8:Ei Compendex(R) 1970-2002/Jul W4
(c) 2002 Engineering Info. Inc.
***File 8: Alert feature enhanced for multiple files, duplicates** removal, customized scheduling. See HELP ALERT.
File 35:Dissertation Abs Online 1861-2002/Jun
(c) 2002 ProQuest Info&Learning
File 94:JICST-EPlus 1985-2002/Jun W1
(c)2002 Japan Science and Tech Corp(JST)
***File 94: There is no data missing. UDs have been adjusted to reflect** the current months data. See Help News94 for details.
File 144:Pascal 1973-2002/Jul W4
(c) 2002 INIST/CNRS

Set	Items	Description
?s (ferroelectric or perovskite or PZT or PLZT or high(w)dielectric(w)constant) and (steam or wet or water or pyrogenic)(10n)(oxidation or oxidiz? or oxidis?)		
	84820	FERROELECTRIC
	34990	PEROVSKITE
	19028	PZT
	4349	PLZT
	3887060	HIGH
	317000	DIELECTRIC
	769482	CONSTANT
	3123	HIGH(W)DIELECTRIC(W)CONSTANT
	119000	STEAM
	89044	WET
	1556471	WATER

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          1212  PYRO[redacted]IC
        362678  OXID[redacted]ION
         91495  OXIDIZ?
          7907  OXIDIS?
         22080  (((STEAM OR WET) OR WATER) OR PYROGENIC)(10N)((OXIDATION
                OR OXIDIZ?) OR OXIDIS?)
    S1      50  (FERROELECTRIC OR PEROVSKITE OR PZT OR PLZT OR
                HIGH(W)DIELECTRIC(W)CONSTANT) AND (STEAM OR WET OR WATER
                OR PYROGENIC)(10N)(OXIDATION OR OXIDIZ? OR OXIDIS?)
?rd
...examined 50 records  (50)
...completed examining records
    S2      43  RD (unique items)
?t s2/full/all
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2/9/1 (Item 1 from file: 2)

7008903 INSPEC Abstract Number: A2001-18-8630G-012, B2001-09-8410G-061

Title: Sr-Doped LaCrO/sub 3/ anode for solid oxide fuel cells

Author(s): Primdahl, S.; Hansen, J.R.; Grahl-Madsen, L.; Larsen, P.H.
Author Affiliation: Riso Nat. Lab., Roskilde, Denmark

Journal: Journal of the Electrochemical Society vol.148, no.1 p. A74-81
Publisher: Electrochem. Soc,
Publication Date: Jan. 2001 Country of Publication: USA
CODEN: JESOAN ISSN: 0013-4651
SICI: 0013-4651(200101)148:1L.a74:DLAS;1-H
Material Identity Number: J010-2001-004
U.S. Copyright Clearance Center Code: 0013-4651/2001/148(1)/74/8/$7.00
Document Number: S0013-4651(01)01301-5
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)

Abstract: A number of doped lanthanum chromite perovskites are considered as anode materials for solid oxide fuel cells with an yttria-stabilized zirconia (YSZ) electrolyte operating in hydrogen at 850 degrees C. The polarization resistance is measured by impedance spectroscopy, and shown to depend significantly on the type and amount of doping. In particular, the composition La/sub 0.8/Sr/sub 0.2/Cr/sub 0.97/V/sub 0.03/O/sub 3/ (LSCV) is examined in detail. Reactivity studies indicate the presence of secondary phases in LSCV. These phases are reactive toward YSZ, resulting in the formation of SrZrO/sub 3/. The secondary phases may be readsorbed during prolonged calcination under reducing conditions. The polarization resistance is shown to increase severely over a few days, and to be recoverable by temporary oxidation. The time constant of the degradation is shown not to match that of the changes in stoichiometry and conductivity during reduction of the **perovskite** . Two rate limiting processes are generally observed. The low frequency process is suggested to relate to adsorption of hydrogen on the LSCV surface or a chemical reaction step. The high frequency process is suggested to relate to the LSCV/YSZ contact interface. LSCV does not exhibit significant catalytic activity toward **steam** reforming of methane, and shows no sign of direct methane **oxidation** . (36 Refs)

Subfile: A B
Descriptors: anodes; catalysis; chemical reactions; chromium compounds; electrochemical electrodes; lanthanum compounds; oxidation; solid electrolytes; solid oxide fuel cells; stoichiometry; strontium compounds; zirconium compounds
Identifiers: solid oxide fuel cells; Sr-doped LaCrO/sub 3/ anode; doped lanthanum chromite perovskites; anode materials; yttria-stabilized zirconia electrolyte; YSZ electrolyte; polarization resistance; impedance spectroscopy; doping; La/sub 0.8/Sr/sub 0.2/Cr/sub 0.97/V/sub 0.03/O/sub 3/ ; reactivity studies; calcination; reducing conditions; temporary oxidation ; time constant; stoichiometry; conductivity; **perovskite** reduction; two rate limiting processes; chemical reaction; high frequency process; catalytic activity; steam reforming; methane; 850 C; SrZrO/sub 3/; ZrO/sub

2/-Y/sub 2/O/sub 3
Class Codes: A8630G (Fuel cells); A8245 (Electrochemistry and electrophoresis); A8265J (Heterogeneous catalysis at surfaces and other surface reactions); B8410G (Fuel cells)
Chemical Indexing:
La0.8Sr0.2Cr0.97V0.03O3 ss - Cr0.97 ss - La0.8 ss - Sr0.2 ss - V0.03 ss - Cr ss - La ss - O3 ss - Sr ss - O ss - V ss (Elements - 5)
SrZrO3 ss - ZrO3 ss - O3 ss - Sr ss - Zr ss - O ss (Elements - 3)
ZrO2Y2O3 ss - O2 ss - O3 ss - Y2 ss - Zr ss - O ss - Y ss (Elements - 3)
Numerical Indexing: temperature 1.12E+03 K

2/9/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

6836199 INSPEC Abstract Number: A2001-06-6470K-005
Title: The crystal structures and phase transitions in Y-doped BaCeO/sub 3/: their dependence on Y concentration and hydrogen doping
Author(s): Takeuchi, K.; Looug, C.-K.; Richardson, J.W., Jr.; Guan, J.; Dorris, S.E.; Balachandran, U.
Author Affiliation: Intense Pulsed Neutron Source Div., Argonne Nat. Lab., IL, USA
Journal: Solid State Ionics, Diffusion & Reactions vol.138, no.1-2 p.63-77
Publisher: Elsevier,
Publication Date: Dec. 2000 Country of Publication: Netherlands
CODEN: SSIOD3 ISSN: 0167-2738
SICI: 0167-2738(200012)138:1/2L.63:CSPT;1-0
Material Identity Number: J811-2001-003
U.S. Copyright Clearance Center Code: 0167-2738/2000/$20.00
Document Number: S0167-2738(00)00771-2
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)
Abstract: The crystal structures and phase transitions in BaCe/sub 1-x/Y/sub x/O/sub 3- delta / (0<or=x<or=0.3) that occur in response to heat treatment in **oxidizing** , reducing, and **water** -vapor-containing atmospheres were determined by neutron powder diffraction at room temperature. Single-phase BaCe/sub 1-x/Y/sub x/O/sub 3- delta / (delta equivalent to x/2) can be synthesized by O/sub 2/-annealing samples prepared by a solid-state reaction method, wherein they crystallize into **perovskite** -type structures (orthorhombic Pmcn for x<or=0.1 and rhombohedral R3c for x>or=0.15). Within the composition range of 0.15<or=x<or=0.25, where maximum total conductivity is observed, the rhombohedral structure converts partially to a monoclinic I2/m structure upon exposure to water- or H/sub 2/-containing atmospheres (including laboratory air) at elevated temperatures. This study may suggest a correlation between the crystal structures, particularly the I2/m phase, and the proton transport properties. (40 Refs)
Subfile: A
Descriptors: barium compounds; cerium; crystal structure; heat treatment; hydrogen; ionic conductivity; mixed conductivity; neutron diffraction; solid-state phase transformations; yttrium compounds
Identifiers: crystal structures; phase transitions; Y concentration; H doping; BaCe/sub 1-x/Y/sub x/O/sub 3- delta /:H; heat treatment; neutron powder diffraction; room temperature; **perovskite** -type structures; rhombohedral structure; monoclinic structure; proton transport; 293 K; BaCeYO/sub 3/:H
Class Codes: A6470K (Solid-solid transitions); A6160 (Crystal structure of specific inorganic compounds); A8130H (Constant-composition solid-solid phase transformations: polymorphic, massive, and order-disorder); A7260 (Mixed conductivity and conductivity transitions); A6630H (Self-diffusion and ionic conduction in solid nonmetals)
Chemical Indexing:
BaCeYO3:H ss - BaCeYO3 ss - Ba ss - Ce ss - O3 ss - H ss - O ss - Y ss - H el - H dop (Elements - 4,1,5)

Chemical Indexing:
PbZrO3TiO3 ss - TiO3 ss - ZrO3 ss - O3 ss - Pb ss - Ti ss - Zr ss - O ss (Elements - 4)
Si sur - Si el (Elements - 1)
Pt-Ti-SiO2-Si int - SiO2 int - O2 int - Pt int - Si int - Ti int - O int - SiO2 bin - O2 bin - Si bin - O bin - Pt el - Si el - Ti el (Elements - 1,1,2,1,4)
Pt-IrO2-SiO2-Si int - IrO2 int - SiO2 int - Ir int - O2 int - Pt int - Si int - O int - IrO2 bin - SiO2 bin - Ir bin - O2 bin - Si bin - O bin - Pt el - Si el (Elements - 1,2,2,1,4)
Numerical Indexing: voltage 2.0E+00 V; voltage 7.0E-01 V; size 7.0E-08 m

2/9/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

6050488 INSPEC Abstract Number: A9822-5275-009
Title: Factors and intermediates governing byproduct distribution for decomposition of butane in nonthermal plasma
Author(s): Futamura, S.; Zhang, A.; Prieto, G.; Yamamoto, T.
Author Affiliation: Nat. Inst. for Resources & Environ., Ibaraki, Japan
Journal: IEEE Transactions on Industry Applications vol.34, no.5 p. 967-74
Publisher: IEEE,
Publication Date: Sept.-Oct. 1998 Country of Publication: USA
CODEN: ITIACR ISSN: 0093-9994
SICI: 0093-9994(199809/10)34:5L.967:FIGB;1-O
Material Identity Number: I202-98005
U.S. Copyright Clearance Center Code: 0093-9994/98/$10.00
Document Number: S0093-9994(98)06777-2
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)
Abstract: Plasma chemical decomposition of butane was investigated with a **ferroelectric** parked-bed plasma reactor to obtain the information on the fundamental chemical processes occurring in nonthermal plasma. It has been shown that butane decomposition efficiencies are higher in nitrogen rather than in air. This fact suggests that energy transfer from hot electrons to butane is mainly responsible for the initial decomposition of butane. Nitrogen incorporation was observed for acetonitrile only in dry nitrogen and for nitromethane in air. Barium titanate and water have been shown to act as monooxygen transfer agents in nitrogen. Lattice oxygen atoms in barium titanate can be consumed in the formation of N/sub 2/O and CO, depending on reaction conditions. Water is much more reactive than barium titanate as an oxidant in nonthermal plasma, and it can oxygenate butane to butanols, epoxidize 1- and 2-butenes, and **oxidize** CO to CO/sub 2/. **Water**, which has a dichotomic nature regarding oxygenation/hydrogenation in plasma, can act as a hydrogen source toward alkyl radicals formed in the initial decomposition of butane. In air, triplet oxygen molecules are the most reactive oxygen source in the presence or absence of water and carbon balance can be improved with suppression of byproducts due to promoted autoxidation processes. (12 Refs)
Subfile: A
Descriptors: decomposition; **ferroelectric** devices; hot carriers; plasma applications
Identifiers: butane decomposition; byproduct distribution; nonthermal plasma technologies; plasma chemical decomposition; **ferroelectric** parked-bed plasma reactor; energy transfer; hot electrons; monooxygen transfer agents; hydrogen source; alkyl radicals; autoxidation processes
Class Codes: A5275 (Plasma devices and applications); A8140 (Treatment of materials and its effects on microstructures and properties)

2/9/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC

5507657 INSPEC Abstract Number: A9707-5275-011, B9704-8699-004

Title: Factors and intermediates governing by product distribution for plasma chemical processing

Author(s): Futamura, S.; Zhang, A.; Prieto, G.; Yamamoto, T.

Author Affiliation: Nat. Inst. for Resources & Environ., Ibaraki, Japan

Conference Title: IAS'96. Conference Record of the 1996 IEEE Industry Applications Conference, Thirty-First IAS Annual Meeting (Cat. No.96CH25977) Part vol.3 p.1818-25 vol.3

Publisher: IEEE, New York, NY, USA

Publication Date: 1996 Country of Publication: USA 4 vol. xxxiv+2583 pp.

ISBN: 0 7803 3544 9 Material Identity Number: XX96-03380

U.S. Copyright Clearance Center Code: 0 7803 3544 9/96/$5.00

Conference Title: IAS '96. Conference Record of the 1996 IEEE Industry Applications Conference Thirty-First IAS Annual Meeting

Conference Date: 6-10 Oct. 1996 Conference Location: San Diego, CA, USA

Language: English Document Type: Conference Paper (PA)

Treatment: Experimental (X)

Abstract: Plasma chemical decomposition of butane was investigated with a **ferroelectric** packed-bed plasma reactor to obtain information on the fundamental chemical processes occurring in nonthermal plasma. It has been shown that butane decomposition efficiencies were higher in nitrogen rather than in air. This fact suggests that energy transfer from hot electrons to butane is mainly responsible for the initial decomposition of butane. Nitrogen incorporation was observed for acetonitrile only in dry air and for nitromethane in air. Barium titanate and water have been shown to act as monooxygen transfer agents in nitrogen. Lattice oxygen atoms in barium titanate can be consumed in the formation of N/sub 2/O and CO, depending on reaction conditions. Water is much more reactive than barium titanate as an oxidant in nonthermal plasma, and it can oxygenate butane to butanols, epoxidize 1- and 2-butenes, and **oxidize** CO to CO/sub 2/. **Water** , which has a dichotomic nature regarding oxygenation/hydrogenation in plasma, can act as a hydrogen source toward alkyl radicals formed in the initial decomposition of butane. In air, triplet oxygen molecules are the most reactive oxygen source in the presence or absence of water, and carbon balance can be improved with suppression of by products due to promoted autoxidation processes. (9 Refs)

Subfile: A B

Descriptors: organic compounds; plasma applications; waste disposal

Identifiers: plasma chemical processing; product distribution; butane decomposition; **ferroelectric** packed-bed plasma reactor; nonthermal plasma ; fundamental chemical processes; waste treatment; oxygenation; hydrogenation; promoted autoxidation processes

Class Codes: A5275 (Plasma devices and applications); B8699 (Power applications in other industries)

2/9/6 (Item 6 from file: 2)

DIALOG(R)File 2:INSPEC

4544155 INSPEC Abstract Number: A9402-6630H-014

Title: Characterization of oxygen-deficient perovskites as oxide-ion electrolytes

Author(s): Manthiram, A.; Kuo, J.F.; Goodenough, J.B.

Author Affiliation: Center for Mater. Sci. & Eng., ETC 9.102, Texas Univ., Austin, TX, USA

Journal: Solid State Ionics, Diffusion & Reactions vol.62, no.3-4 p.225-34

Publication Date: Aug. 1993 Country of Publication: Netherlands

CODEN: SSIOD3 ISSN: 0167-2738

U.S. Copyright Clearance Center Code: 0167-2738/93/$06.00

Language: English Document Type: Journal Paper (JP)

Treatment: Experimental (X)
Abstract: Oxide-ion conduction in oxygen-deficient perovskites is analogous in several respects to that in oxygen-deficient fluorite structures. The authors report an important difference: oxygen-deficient AMO/sub 3-y/ perovskites containing M cations that are unstable in less than sixfold anion coordination may, at modest temperatures, capture oxygen and/or water from air to fill, at least partially, the oxygen vacancies. The insertion of **water** introduces mobile protons; the insertion of oxygen **oxidizes** the oxide-ion array in the presence of fully oxidized main group cations. They illustrate this insertion with the **perovskite** system BaZr/sub 1-x/In/sub x/O/sub 3-0.5x/, M=Zr or Hf. The data suggest that any ordering of the oxygen vacancies so as to give planes of corner-shared MO/sub 4/ tetrahedra permits facile insertion of water and/or oxygen. In contrast, the oxygen-deficient fluorite structure has each cation in at least sixfold oxide-ion coordination, and the problem of water or oxygen insertion at modest temperatures does not arise. (18 Refs)
Subfile: A
Descriptors: ionic conduction in solids
Identifiers: oxygen-deficient perovskites; oxide-ion electrolytes; sixfold anion coordination; vacancies; BaZr/sub 1-x/In/sub x/O/sub 3-0.5x/
Class Codes: A6630H (Self-diffusion and ionic conduction in nonmetals)
Chemical Indexing:
BaZrInO ss - Ba ss - In ss - Zr ss - O ss (Elements - 4)

2/9/7 (Item 7 from file: 2)
DIALOG(R)File 2:INSPEC

03263345 INSPEC Abstract Number: A89000585
Title: Neptunium doping of the crystalline ceramic waste form synroc B
Author(s): Matzke, Hj.; Toscano, E.; Walker, C.T.; Solomah, A.G.
Author Affiliation: CEC, Joint Res. Center, Karlsruhe Establ. Eur. Inst. for Transuranium Elements, Karlsruhe, West Germany
Journal: Advanced Ceramic Materials vol.3, no.3 p.285-8
Publication Date: May 1988 Country of Publication: USA
CODEN: ACEME8 ISSN: 0883-5551
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)
Abstract: The crystalline ceramic waste form synroc B was produced with a nominal loading of 10 wt.% NpO/sub 2/ by soaking green pellets with NP solution followed by sintering in reducing atmosphere (Ar/8% H/sub 2/). Electron microprobe analysis showed that Np was partitioned between the zirconolite (10.7 wt.% Np) and **perovskite** phases (9.5 wt.%), whereas the remaining two phases of hollandite and rutile contained <or=0.2 wt.% Np. The partitioning of Np was not significantly changed by an **oxidizing** anneal. Leach tests (190 degrees C, 7 d, deionized **water**) showed the leach rate for Np to be <5*10/sup -3/ g/(m/sup 2/.d). (26 Refs)
Subfile: A
Descriptors: ceramics; radioactive waste; waste disposal
Identifiers: crystalline ceramic waste; synroc B; green pellets; hollandite; rutile; leach rate; Al/sub 2/O/sub 3/-ZrO/sub 2/-BaO-CaO-TiO/sub 2/-NpO/sub 2/
Class Codes: A2842K (Radioactive wastes); A2875 (Radioactive waste, transportation, disposal, storage, treatment)
Chemical Indexing:
Al2O3ZrO2BaOCaOTiO2NpO2 ss - Al2O3 ss - Al2 ss - Al ss - Ba ss - Ca ss - Np ss - O2 ss - O3 ss - Ti ss - Zr ss - O ss (Elements - 7)

2/9/8 (Item 8 from file: 2)
DIALOG(R)File 2:INSPEC

02250482 INSPEC Abstract Number: A84061343
Title: Oxidation states of nickel in reduced phases of LaNiO/sub 3/ by XANES and EXAFS

Author(s): Crespin, [redacted] Levitz, P.; Gatineau, L. [redacted]
Author Affiliation: [redacted]OCI, CNRS, Orleans, France
Conference Title: EXAFS and Near Edge Structures. Proceedings of the International Conference p.228-30
Editor(s): Bianconi, A.; Incoccia, L.; Stipcich, S.
Publisher: Springer-Verlag, Berlin, West Germany
Publication Date: 1983 Country of Publication: West Germany xii+420 pp.
ISBN: 3 540 12411 X
Conference Date: 13-17 Sept. 1982 Conference Location: Frascati, Italy
Language: English Document Type: Conference Paper (PA)
Treatment: Experimental (X)
Abstract: The reduction of LaNiO/sub 3/ **perovskite** has been carried out within a recirculation loop by hydrogen. The degree of reduction of the **perovskite** was measured manometrically by the hydrogen consumption. Moreover the all consummated hydrogen has been transformed into **water** trapped in a nitrogen getter. The different **oxidation** states of nickel in three stages of the reduction has been determined by XANES and EXAFS. The results assume that the nickel, initially in the 3+ stage in LaNiO/sub 3/, is reduced to 2+ in La/sub 2/Ni/sub 2/O/sub 5/ and to 1+ in LaNiO/sub 2/ and is in the metallic stage at the end of the reduction. (3 Refs)
Subfile: A
Descriptors: EXAFS; lanthanum compounds; oxidation; reduction (chemical); X-ray absorption spectra
Identifiers: Ni oxidation states; reduced phases; LaNiO/sub 3/; XANES; EXAFS; **perovskite** ; recirculation loop; La/sub 2/Ni/sub 2/O/sub 5/; LaNiO/sub 2
Class Codes: A7170M (Other bulk localised states); A7870D (X-ray absorption and absorption edges)

2/9/9 (Item 9 from file: 2)
DIALOG(R)File 2:INSPEC

00631941 INSPEC Abstract Number: A74032518
Title: Crystal preparation and properties of cesium tin(II) trihalides
Author(s): Scaife, D.E.; Weller, P.F.; Fisher, W.G.
Author Affiliation: CSIRO, Port Melbourne, Vic., Australia
Journal: Journal of Solid State Chemistry vol.9, no.3 p.308-14
Publication Date: March 1974 Country of Publication: USA
CODEN: JSSCBI ISSN: 0022-4596
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)
Abstract: Synthesis methods for cesium tin(II) trihalides via aqueous solution and from the melts of anhydrous halides, which ensure freedom from **oxidation** and the effects of traces of **water** , are described. The halide compounds CsSnCl/sub 3/, CsSnBr/sub 2/Cl, CsSnBr/sub 3/, CsSnBr/sub 2/I, CsSnBrI/sub 2/, and CsSnI/sub 3/ all have the cubic **perovskite** structure at elevated temperatures, and all but the first two are good electrical conductors in this form. The growth of single crystals from the melt, and by vapor transport, is outlined. The /sup 35/Cl nuclear quadrupole resonance spectrum of monoclinic CsSnCl/sub 3/ consists of three lines, with frequencies 9.799, 11.005, and 11.695 MHz at 25 degrees C, confirming the presence of pyramidal SnCl/sub 3//sup -/ ions in this structure. In CsSnBr/sub 3/, there is a single /sup 81/Br nuclear quadrupole resonance line, with frequency 63.073 MHz at 25 degrees C, which splits into two lines on cooling the sample below 19 degrees C. The low-temperature form of CsSnBr/sub 3/ apparently has a tetragonally distorted **perovskite** structure, with a=11.59 and c=11.61 AA at 12 degrees C. A single /sup 127/I nuclear quadrupole resonance line was observed in the low temperature orthorhombic form of CsSnI/sub 3/, with frequency 79.707 MHz at 25 degrees C, and the variation of the frequency of this line with temperature may indicate a minor phase change in CsSnI/sub 3/ at 35 degrees C. (20 Refs)
Subfile: A
Descriptors: caesium compounds; crystal atomic structure of inorganic compounds; crystal growth from melt; crystal growth from solution; nuclear

quadrupole resonance; [redacted]ymorphism; tin compounds
Identifiers: crystal [redacted]eparation; CsSnCl/sub 3/; CsSn[redacted]sub 2/Cl; CsSnBr/sub 3/; CsSnBr/sub 2/I; CsSnBrI/sub 2/; CsSnI/sub 3/; cubic **perovskite** structure; good electrical conductors; phase change; from solution; from melt; /sup 35/Cl NQR; /sup 81/Br NQR; /sup 127/NQR
Class Codes: A6160 (Specific structure of inorganic compounds); A7660G (Quadrupole resonance); A8110 (Methods of crystal growth and purification)

2/9/10 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05949029 E.I. No: EIP01496745844
Title: Novel heterogeneous catalysts in the wet **peroxide** oxidation **of phenol**
Author: Ovejero, G.; Sotelo, J.L.; Martinez, F.; Gordo, L.
Corporate Source: Chemical Engineering Department Faculty of Chemistry Complutense University, Madrid 28040, Spain
Source: Water Science and Technology v 44 n 5 2001. p 153-160
Publication Year: 2001
CODEN: WSTED4 ISSN: 0273-1223
Language: English
Document Type: JA; (Journal Article) Treatment: X; (Experimental)
Journal Announcement: 0112W2
Abstract: Catalytic **wet** peroxide **oxidation** (CWPO) of diluted aqueous solutions of phenol has been studied over a series of heterogeneous catalysts at 100 degree C under 1MPa air pressure. Several catalysts were prepared and tested including zeolitic materials exchanged with metallic ions such as Fe and Cu and different mixed oxides. Likewise, a Fe-TS-1 zeolite was synthesised by isomorphous substitution of Si atoms by Fe and Ti into the MFI zeolitic framework through hydrothermal synthesis of wetness-impregnated Fe//2O//3-TiO//2-SiO//2 xerogels. This material showed a complete phenol removal and TOC reduction of up to 68% under the reaction conditions, with a low leaching of iron species as compared to Fe-exchanged zeolitic materials. **Perovskite** of type LaTi//0//.//4//5Cu//0//.//5//5O//3 was also tested, showing copper leaching of 22%, with a TOC conversion of 93% and total phenol removal. The capacity of Fe and Cu containing catalysts to promote free radicals in the presence of H//2O//2 as well as the thermal decomposition of the oxidant under the reaction conditions have also been studied. In the absence of hydrogen peroxide, Fe and Cu catalysts were not effective in order to decrease TOC content. 21 Refs.
Descriptors: Phenols; Oxidation; Catalysts; Zeolites; Ion exchange; Hydrothermal synthesis; Leaching; **Perovskite** ; Pyrolysis; Hydrogen peroxide
Identifiers: Heterogeneous catalysts; Isomorphous substitution
Classification Codes:
804.1 (Organic Compounds); 802.2 (Chemical Reactions); 804.2 (Inorganic Compounds); 802.3 (Chemical Operations); 482.2 (Minerals)
804 (Chemical Products Generally); 802 (Chemical Apparatus & Plants; Unit Operations; Unit Processes); 803 (Chemical Agents & Basic Industrial Chemicals); 482 (Mineralogy)
80 (CHEMICAL ENGINEERING, GENERAL); 48 (ENGINEERING GEOLOGY)

2/9/11 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05825968 E.I. No: EIP01226521990
Title: Kinetics of propane combustion over La//0//.//6//6Sr//0//.//3//4Ni //0//.//3Co//0//.//7 O//3 perovskite
Author: Kwang Sup Song; Klvana, D.; Kirchnerova, J.
Corporate Source: Department of Chemical Engineering Ecole Polytechnique Station Center-ville, Montreal, Que. H3C 3A7, Canada
Source: Applied Catalysis A: General v 213 n 1 May 14 2001. p 113-121

Publication Year: 20
CODEN: ACAGE4 ISSN: 0926-860X
Language: English
Document Type: JA; (Journal Article) Treatment: T; (Theoretical); X; (Experimental)
Journal Announcement: 0106W2
Abstract: La//0//.//6//6Sr//0//.//3//4Ni//0//.//3Co//0//.//7 O//3 (LSNC) **perovskite** is an excellent catalyst in several oxygen involving reactions, including methane combustion. Catalytic combustion of propane based on efficient technologies using low cost catalysts could serve as a non-polluting source of energy in remote regions. To optimize reactors for catalytic combustion (combusters), reliable kinetic data are needed. In this paper are presented kinetics of a complete propane oxidation over LSNC studied at a steady state in a plug-flow reactor. The experimental data were obtained for 0.5 g catalyst at temperatures between 473 and 613 K, with propane concentration varied from 0.58 to 4.76 vol.% oxygen between 7.5 and 98 vol.%, and flowrate between 100 and 400 ml/min. The LSNC catalyst, prepared with high specific surface area of 15 m**2/g, shows again an excellent stable activity which competes favorably with that of noble metals. Several kinetic models have been tested. Best fit was obtained with the Mars-van Krevelen kinetic model. Nevertheless, the complete set of obtained data can also be fitted adequately by a simple power law model with 0.5 order in propane and 0.3 order in oxygen and apparent activation energy of 71 kJ/mol. Both water and carbon dioxide added to the feed have slight inhibiting effect, which was taken into account in a final extended Mars-van Krevelen kinetic model. copy 2001 Elsevier Science B.V. 33 Refs.
Descriptors: Propane; Reaction kinetics; Combustion; **Perovskite** ; Catalyst activity; Lanthanum compounds; Catalysis; **Oxidation** ; **Water** ; Activation energy; Carbon dioxide; Mathematical models; Oxygen
Identifiers: Catalytic combustion; Mars-van Krevelen kinetic model
Classification Codes:
804.1 (Organic Compounds); 802.2 (Chemical Reactions); 521.1 (Fuel Combustion); 482.2 (Minerals); 804.2 (Inorganic Compounds); 801.4 (Physical Chemistry)
804 (Chemical Products Generally); 802 (Chemical Apparatus & Plants; Unit Operations; Unit Processes); 521 (Fuel Combustion & Flame Research); 482 (Mineralogy); 803 (Chemical Agents & Basic Industrial Chemicals); 801 (Chemistry); 921 (Applied Mathematics)
80 (CHEMICAL ENGINEERING, GENERAL); 52 (FUEL TECHNOLOGY); 48 (ENGINEERING GEOLOGY); 92 (ENGINEERING MATHEMATICS)

2/9/12 (Item 3 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05741721 E.I. No: EIP00125455397
Title: Catalytic oxidation of 1,2-dichlorobenzene over ABO//3-type perovskites
Author: Poplawski, Karoline; Lichtenberger, Janine; Keil, Frerich J.; Schnitzlein, Klaus; Amiridis, Michael D.
Corporate Source: Univ of South Carolina, Columbia, SC, USA
Source: Catalysis Today v 62 n 4 Nov 2000. p 329-336
Publication Year: 2000
CODEN: CATTEA ISSN: 0920-5861
Language: English
Document Type: JA; (Journal Article) Treatment: T; (Theoretical); X; (Experimental)
Journal Announcement: 0102W2
Abstract: Several ABO//3-type **perovskite** oxides (A equals La, Y, Nd or Gd; B equals Fe, Mn, Cr or Co) have been investigated as catalysts for the oxidation of 1,2-dichlorobenzene (o-DCB), a model compound for the highly toxic polychlorinated dibenzodioxins. Initial transient and steady state activity measurements were conducted with all catalysts in the absence and presence of water. Perovskites containing Cr in the B-site were more active than perovskites containing other transition metals, with YCrO//3 being the

most active catalyst among the different systems studied. Furthermore, YCrO//3 did not show any loss of its initial activity after several hours on stream. Other perovskites lost 10-20% of their initial activity within the first 5-10 h on stream. This loss was associated with a corresponding loss in BET surface area. With the exception of LaCoO//3, all perovskites retained their crystalline structure upon exposure to o-DCB under reaction conditions. LaCoO//3 was converted to LaOCl and Co//3O//4. The presence of water appeared to enhance the catalytic activity of some perovskites. This effect can be attributed to a faster removal of Cl** minus ions from the catalyst surface via their reaction with water. (Author abstract) 30 Refs.

Descriptors: Catalysts; **Perovskite** ; Catalysis; **Oxidation** ; Chlorine compounds; Mathematical models; Catalyst activity; **Water** ; Association reactions; Surface structure

Identifiers: Catalytic oxidation; Dichlorobenzene; Polychlorinated dibenzodioxins; Braneur-Emmet-Tyler surface area; Dibenzofurans

Classification Codes:

804.1 (Organic Components); 482.2 (Minerals); 802.2 (Chemical Reactions); 921.6 (Numerical Methods); 804.2 (Inorganic Components)

801 (Chemical Analysis & Physical Chemistry); 804 (Chemical Products); 482 (Mineralogy & Petrology); 802 (Chemical Apparatus & Plants); 921 (Applied Mathematics)

80 (CHEMICAL ENGINEERING); 48 (ENGINEERING GEOLOGY); 92 (ENGINEERING MATHEMATICS)

2/9/13 (Item 4 from file: 8)

DIALOG(R)File 8:Ei Compendex(R)

05672312 E.I. No: EIP00095342253

Title: Oxidation of VOCs over monolithic perovskite **catalysts**

Author: Musialik-Piotrowska, Anna; Syczewska, Krystyna; Schubert, Eberhard

Corporate Source: Wroclaw Univ of Technology, Wroclaw, Pol

Source: Environmental Protection Engineering v 26 n 1 2000. p 119-130

Publication Year: 2000

CODEN: EPEND9 ISSN: 0324-8828

Language: English

Document Type: JA; (Journal Article) Treatment: X; (Experimental)

Journal Announcement: 0011W4

Abstract: Three monolithic **perovskite** catalysts, one bulk LH and two WK coated on cordierite support, and one basing on Cu-Co-Mn oxides on cordierite monolith, were manufactured. They were tested for oxidation of selected hydrocarbons (toluene and n-hexane) and oxyderivatives (acetone, ethyl acetate and butyl acetate). LaMnO//3 **perovskite** was used as active phase in preparation of WK catalysts, with La**3** plus ions partially exchanged for Ag** plus ions (25 and 50%). Hydrocarbons were oxidized with lower than oxyderivatives efficiency, but they underwent **oxidation** to CO//2 and **water** over all catalysts investigated. **Oxidation** of oxyderivatives ran via intermediates, first of all aldehydes, typical products of incomplete oxidation. The concentration of yielded intermediates decreased with the rise in the reaction temperature. The addition of silver enhanced catalytic activity and improved the reaction selectivity with respect to CO//2 and water. (Author abstract) 11 Refs.

Descriptors: Volatile organic compounds; **Perovskite** ; Catalysts; Oxidation; Toluene; Carbon monoxide; Silver; Thermal effects

Identifiers: Oxyderivatives; Monolithic **perovskite** catalysts

Classification Codes:

804.1 (Organic Components); 482.2 (Minerals); 802.2 (Chemical Reactions); 804.2 (Inorganic Components); 547.1 (Precious Metals)

804 (Chemical Products); 482 (Mineralogy & Petrology); 803 (Chemical Agents & Basic Industrial Chemicals); 802 (Chemical Apparatus & Plants); 547 (Precious & Rare Earth Metals & Alloys)

80 (CHEMICAL ENGINEERING); 48 (ENGINEERING GEOLOGY); 54 (METAL GROUPS)

2/9/14 (Item 5 from file: 8)

temperature range 300-[redacted] degree C, in the pressure ran[redacted] 1-9 atmospheres and for H//2/CO ratios [redacted] the range 1-4 in a differenti[redacted] plug flow reactor for the hydrogenation of carbon monoxide to give hydrocarbons. The **perovskite** oxide (YBCO) 20% (w/w) and doped 2% (w/w) cobalt oxide catalyst were prepared by the **wet** chemical method from their nitrate solutions and **oxidized** at 950 degree C. **Perovskite** oxide (Dursun, G. & Winterbottom, J. M., J. Chem. Technol Biotechnol. 63 (1995) 113-16) was also doped with palladium and ruthenium metal by impregnation followed by oxidation at 250 degree C. The catalysts prepared were characterized by using Temperature-Programmed Reduction (TPR) to observe the reduction temperature and also to measure total and metal surface area. The modified **perovskite** oxide on alumina, ruthenium- and cobalt-doped catalysts, has been shown to give a better conversion and also selectivity towards saturated hydrocarbons compared with palladium-doped catalyst. The temperature effect of these catalysts is more consistent, giving a steady increase of conversion with increasing temperature. Although increase of pressure increases the conversion, it causes very little change in product distribution. The activation energy of palladium- and ruthenium-doped, and cobalt co-precipitated catalysts for the reaction has been measured to be 55 kJ mol** minus **1, 75 kJ mol** minus **1 and 50 kJ mol** minus **1 respectively. A general rate equation of the form r equals k left bracket H//2 right bracket **m left bracket CO right bracket **n has been observed and found to be applicable at the pressures and temperatures used for the catalytic system studied and found to be m congruent 1.0 for palladium-doped, m congruent 1.2 for ruthenium-doped and m congruent 0.95 for cobalt co-precipitated catalysts as n becomes zero or negligibly less than zero. The mechanism of reaction to produce hydrocarbons from syngas has been deduced from the results. It appeared that the carbon monoxide insertion mechanism has been more evident for palladium-doped catalysts whereas the carbide mechanism plays the main role for the ruthenium-doped and cobalt co-precipitated catalysts. (Author abstract) 21 Refs.

Descriptors: Hydrogenation; Oxide superconductors; **Perovskite** ; Catalysis; Precipitation (chemical); Wetting; Temperature programmed desorption; Activation energy; Hydrocarbons; Carbon monoxide

Identifiers: **Perovskite** oxide; Syngas; Carbonate precipitation

Classification Codes:

708.3.1 (High Temperature Superconducting Materials)

802.3 (Chemical Operations); 708.3 (Superconducting Materials); 802.2 (Chemical Reactions); 801.1 (Chemistry, General); 801.4 (Physical Chemistry); 804.1 (Organic Components)

802 (Chemical Apparatus & Plants); 708 (Electric & Magnetic Materials); 801 (Chemical Analysis & Physical Chemistry); 804 (Chemical Products)

80 (CHEMICAL ENGINEERING); 70 (ELECTRICAL ENGINEERING)

2/9/16 (Item 7 from file: 8)

DIALOG(R)File 8:Ei Compendex(R)

04639295 E.I. No: EIP97033546313

Title: Comparative study of LaCoO//3, Co//3O//4 and LaCoO//3-Co//3O//4 I. Preparation, characterisation and catalytic properties for the oxidation of CO

Author: Simonot, Laure; Garin, Francois; Maire, Gilbert

Corporate Source: CNRS-ULP-ECPM, Strasbourg, Fr

Source: Applied Catalysis B:Environmental v 11 n 2 Feb 7 1997. p 167-179

Publication Year: 1997

CODEN: ACBEE3 ISSN: 0926-3373

Language: English

Document Type: JA; (Journal Article) Treatment: X; (Experimental)

Journal Announcement: 9704W4

Abstract: LaCoO//3, Co//3O//4 and a mix of them, were synthesized and studied in the case of automotive exhaust reactions. Two preparation methods were used: simultaneous precipitation and a sol-gel type. The samples were characterized by X-ray diffraction, TPR, TPO and microanalysis. The CO **oxidation** reaction was performed under dry or **wet** atmospheres for a binary CO plus O//2 and a complete CO plus NO plus

C//3H//8 plus O//2 gas mixture. In all cases, the cobalt oxide pointed out the best performances. The quenching effect of the surface of the sol-gel catalysts induced activity at room temperature under the CO plus O//2 dry mixture. Under the complete wet gas mixture, the **perovskite** LaCoO//3 showed a lower activation energy for the CO oxidation reaction than for Co//3O//4. (Author abstract) 16 Refs.

Descriptors: *Catalysts; Characterization; Catalysis; Catalyst activity; Oxidation; Carbon monoxide; Oxides; Synthesis (chemical); Precipitation (chemical); X ray diffraction

Identifiers: Catalytic activity; Mixed oxides; Automotive exhaust reactions; Sol gel type; Cobalt oxide

Classification Codes:

802.2 (Chemical Reactions); 804.2 (Inorganic Components); 802.3 (Chemical Operations); 931.3 (Atomic & Molecular Physics)

803 (Chemical Agents & Basic Industrial Chemicals); 804 (Chemical Products); 802 (Chemical Apparatus & Plants); 931 (Applied Physics)

80 (CHEMICAL ENGINEERING); 93 (ENGINEERING PHYSICS)

2/9/17 (Item 8 from file: 8)

04578527 E.I. No: EIP96123470973

Title: Factors and intermediates governing byproduct distribution for plasma chemical processing

Author: Futamura, Shigeru; Zhang, Aihua; Prieto, Graciela; Yamamota, Toshiaki

Corporate Source: Natl Inst for Resources and Environment, Ibaraki, Jpn

Conference Title: Conference Record of the 1996 IEEE Industry Applications 31th IAS Annual Meeting. Part 3 (of 4)

Conference Location: San Diego, CA, USA Conference Date: 19961006-19961010

Sponsor: IEEE

E.I. Conference No.: 45752

Source: Conference Record - IAS Annual Meeting (IEEE Industry Applications Society) v 3 1996. IEEE, Piscataway, NJ, USA,96CH35977. p 1818-1825

Publication Year: 1996

CODEN: CIASDZ ISSN: 0197-2618

Language: English

Document Type: CA; (Conference Article) Treatment: A; (Applications); X ; (Experimental)

Journal Announcement: 9702W1

Abstract: Plasma chemical decomposition of butane was investigated with a **ferroelectric** packed-bed plasma reactor to obtain the information on the fundamental chemical processes occurring in nonthermal plasma. It has been shown that butane decomposition efficiencies were higher in nitrogen rather than in air. This fact suggests that energy transfer from hot electrons to butane is mainly responsible for the initial decomposition of butane. Nitrogen incorporation was observed for acetonitrile only in dry air and for nitromethane in air. Barium titanate and water have been shown to act as monooxygen atoms in barium titanate can be consumed in oxygen atoms in barium titanate can be consumed in the formation of N//2O and CO, depending on reaction conditions. Water is much more reactive than barium titanate as an oxidant in nonthermal plasma, and it can oxygenate butane to butanols, epoxidize 1- and 2-butenes, and **oxidize** CO to CO//2. **Water** , which has a dichotomic nature regarding oxygenation/hydrogenation in plasma, can act as a hydrogen source toward alkyl radicals formed in the initial decomposition of butane. In air, triplet oxygen molecules are the most reactive oxygen source in the presence or absence of water, and carbon balance can be improved with suppression of byproducts due to promoted autoxidation processes. (Author abstract) 9 Refs.

Descriptors: *Decomposition; Plasma applications; Butane; Volatile organic compounds; Plasma devices; Barium titanate; Plasmas; Structure (composition); Water; Oxygen

Identifiers: By product distribution; Plasma chemical processing; Plasma

chemical decomposition; Nonthermal plasma; Alkyl radicals; Plasma reactors; **Ferroelectric** pellet packed bed reactors

Classification Codes:

802.2 (Chemical Reactions); 932.3 (Plasma Physics); 804.1 (Organic Components); 804.2 (Inorganic Components); 812.1 (Ceramics); 801.4 (Physical Chemistry)

802 (Chemical Apparatus & Plants); 932 (High Energy, Nuclear & Plasma Physics); 804 (Chemical Products); 812 (Ceramics & Refractories); 801 (Chemical Analysis & Physical Chemistry)

80 (CHEMICAL ENGINEERING); 93 (ENGINEERING PHYSICS); 81 (CHEMICAL PROCESS INDUSTRIES)

2/9/18 (Item 9 from file: 8)

04022355 E.I. No: EIP94112419978

Title: Solar photocatalytic decontamination of water

Author: Zhang, Yin; Crittenden, John C.; Hand, David W.
Corporate Source: Michigan Technological Univ, Houghton, Mi, USA

Source: Chemistry and Industry (London) n 18 Sept 19 1994. p 714-717
Publication Year: 1994
CODEN: CHINAG ISSN: 0009-3068
Language: English
Document Type: JA; (Journal Article) Treatment: G; (General Review)
Journal Announcement: 9502W4

Abstract: This article focuses on the research and development of solar photocatalytic decontamination of water using semiconductor photocatalysts. The semiconductor photocatalyst absorbs impinging photons with energies higher than the bandgap or threshold energy and generates **oxidation** sites on its surface. These **oxidation** sites react with adsorbed **water** molecules or hydroxyl ions and produce hydroxyl radicals, which are very strong oxidants capable of oxidizing virtually any organic compounds. Semiconductors investigated as photocatalysts are mainly binary and **perovskite** -structure ternary metal oxides, such as titanium dioxide (TiO//2) and strontium titanate (SrTiO//3). To date, the anatase form of TiO//2 seems to be the most desirable for photocatalytic processes. The threshold energy of this semiconductor photocatalyst is 3.2 eV, so it can be activated by solar radiation with wavelengths less than 387.5 nm. To use more available solar irradiation and increase light efficiency, a great deal of research has been done on surface modification of TiO//2. The authors' group has found that thermal treatment alters the particle size and surface area, improving the performance of the catalyst. They have also synthesized platinized TiO//2 and TiO//2 obtained by a sol-gel process with improved performances. 40 Refs.

Descriptors: Water treatment; Chemicals removal (**water** treatment); Solar radiation; Photochemical reactions; Free radical reactions; Organic chemicals; **Oxidation** ; Catalysts; Semiconductor materials; Titanium dioxide

Identifiers: **Water** decontamination; Solar photocatalytic decontamination; Photochemical **oxidation** ; Hydroxyl radical formation; Semiconductor photocatalysts; Anatase titanium dioxide; Light-absorbing efficiency; Thermal surface treatment; Platinized titanium dioxide; Sol-gel process titanium dioxide

Classification Codes:

712.1.2 (Compound Semiconducting Materials)

445.1 (Water Treatment Techniques); 802.2 (Chemical Reactions); 657.1 (Solar Energy & Phenomena); 804.1 (Organic Components); 804.2 (Inorganic Components); 712.1 (Semiconducting Materials)

445 (Water Treatment); 802 (Chemical Apparatus & Plants); 657 (Space Physics); 804 (Chemical Products); 712 (Electronic & Thermionic Materials)

44 (WATER & WATERWORKS ENGINEERING); 80 (CHEMICAL ENGINEERING); 65 (AEROSPACE ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS)

2/9/19 (Item 10 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03586388 E.I. Monthly No: EI9304052789
Title: Thermodynamical model for perovskite **ABO//3 reduction with conversed methane.**
Author: Mikhnevich, V. V.; Bashkirov, L. A.; Shkrob, I. A.; Shishkin, N. Ya.; Kozlovskaya, A. E.; Kotin, N. M.
Source: Steklo i Keramika n 10 Oct 1992 p 13-14
Publication Year: 1992
CODEN: STKRAQ ISSN: 0131-9582
Language: Russian
Document Type: JA; (Journal Article) Treatment: A; (Applications); T; (Theoretical)
Journal Announcement: 9304
Abstract: The paper deals with the process of semiconductor ceramics (ABO//3 perovskites) annealing. The suggestion is made to substitute dangerous hydrogen annealing for annealing in conversed methane. With the aim of optimization of the process suggested thermodynamic calculations are accomplished for barium titanate reduction at 60% content of oxidizer in conversed methane atmosphere. Numerical calculations show the possibility of application of this reductive medium at 1250, 1300 and 1350 K. **Water** and carbon dioxide serve as **oxidizers** for methane conversion since they do not form explosive mixtures with methane. The reduction process in found to be rather stable. 6 Refs. In Russian.
Descriptors: SEMICONDUCTOR MATERIALS; **PEROVSKITE** ; ANNEALING; REDUCTION; METHANE; PROTECTIVE ATMOSPHERES; ACCIDENT PREVENTION
Identifiers: BARIUM TITANATE REDUCTION; SEMICONDUCTING CERAMICS ANNEALING
Classification Codes:
712 (Electronic & Thermionic Materials)
71 (ELECTRONICS & COMMUNICATIONS)

2/9/20 (Item 1 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online

01506238 ORDER NO: AADMM-08188
ETUDE DE LA DESACTIVATION DES PEROVSKITES AU COURS DE L'OXYDATION CATALYTIQUE DU GAZ NATUREL (FRENCH TEXT)
Author: DELVAL, JOACHIM
Degree: M.SC.A.
Year: 1995
Corporate Source/Institution: ECOLE POLYTECHNIQUE, MONTREAL (CANADA) (1105)
Source: VOLUME 34/05 of MASTERS ABSTRACTS.
PAGE 1999. 203 PAGES
Descriptors: ENGINEERING, CHEMICAL
Descriptor Codes: 0542
Language: FRENCH
ISBN: 0-612-08188-5

This research project is a part of a larger program concerning the catalytic combustion of natural gas, a "clean" technology which avoids the formation of NO$\sb{x}$. The main objective of this project was to study the long term behaviour of **perovskite** on fibrous support catalysts developed at the chemical engineering department under different operating conditions.

The first part of this work was to study, in a Berty reactor, the effects on catalysts' activity of: combustion products, excess methane, ethane, and in particular of methylmercaptan (used as an odorant); the thermal stability of the catalyst was also verified. This study showed that carbon dioxide has an inhibiting effect on the main oxidation reaction. In addition, decrease in activity was observed when methylmercaptan (CH$\sb3$SH) was introduced into the reaction mixture.

This phenomenon of deactivation ("poisoning"), believed to be caused

reduction(reaction); oxidation; effect; alkaline earth metal compound; aliphatic hydrocarbon; hydrocarbon
CLASSIFICATION CODE(S): YD02000V; CB06100E

2/9/25 (Item 4 from file: 94)
DIALOG(R)File 94:JICST-EPlus

02678842 JICST ACCESSION NUMBER: 96A0297203 FILE SEGMENT: JICST-E
Oxidative Coupling of Methane Using Water as Oxidant. (3). Oxygen Species of Sn Mixed Oxides.
OMATA KOJI (1); EHARA TOSHIYA (1); KAWAI IEYASU (1); YAMADA MUNEYOSHI (1)
(1) Tohoku Univ., Grad. Sch.
Shokubai(Catalysts & Catalysis), 1996, VOL.38,NO.2, PAGE.140-143, FIG.8, REF.6
JOURNAL NUMBER: F0319AAE ISSN NO: 0559-8958 CODEN: SHKUA
UNIVERSAL DECIMAL CLASSIFICATION: 544.478-03+ 66.097
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Short Communication
MEDIA TYPE: Printed Publication
ABSTRACT: In the present work the activity of mixed oxide of SnO2 and alkali earth metal oxide for oxidative methane coupling (OCM) was tested by periodic reaction where methane and **water** /argon were alternately supplied for OCM reaction and re- **oxidation** , respectively. The bulk phase of these oxides were identified by XRD. **Perovskite** oxide (ABO3), SnO2 and K2NiF4/spinel type oxide (A2BO4) were observed. Clear relation between the content of A2BO4 type oxide and activity of C2 formation were revealed as was the case with the intensity of SnO2 and activity of COx formation. The result suggests that A2BO4 phase is active for C2 formation while SnO2 is active for COx formation. Then, pure Sr2SnO4 was successfully prepared and the activity of Sr2SnO4 per surface area was about 5 times higher than that of SrSnO3. It is suggested from these results that the activity of "SrSnO3" arises from Sr2SnO4 phase in the oxide. Surface oxygen species of Sr2SnO4 was observed by XPS. Besides carbonate and lattice O2- species, O- and O22- were observed. The presence of these species should be responsible for the selective oxidative coupling of methane. (author abst.)
DESCRIPTORS: catalytic oxidation; coupling reaction; water molecule; hydrogen; magnesium compound; calcium compound; strontium compound; barium compound; stannate; tin oxide; cerium oxide; niobium oxide; selectivity; oxidative coupling; alkane
BROADER DESCRIPTORS: oxidation; chemical reaction; catalytic reaction; triatomic molecule; polyatomic molecule; molecule; element; alkaline earth metal compound; oxoate; oxygen compound; oxygen group element compound; tin compound; carbon group element compound; metal oxide; oxide; chalcogenide; cerium compound; rare earth element compound; transition metal compound; niobium compound; 5A group element compound; property; aliphatic hydrocarbon; hydrocarbon
CLASSIFICATION CODE(S): CB06123Z; XE01050T

2/9/26 (Item 5 from file: 94)
DIALOG(R)File 94:JICST-EPlus

02135269 JICST ACCESSION NUMBER: 95A0534833 FILE SEGMENT: PreJICST-E
Oxidative Coupling of Methane by Water.
TOMISHIGE KEIICHI (1); FUJIMOTO KAORU (1); LI X (1)
(1) Univ. of Tokyo, Fac. of Eng.
Nippon Kagakkai Koen Yokoshu, 1995, VOL.69th,NO.1, PAGE.67
JOURNAL NUMBER: S0493AAY ISSN NO: 0285-7626
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Conference Proceeding
MEDIA TYPE: Printed Publication
ABSTRACT: It was found that methane was selectively **oxidized** by **water**

molecule to give C2 hydrocarbon and hydrogen on the perovskite type strontium titaium base titanate ion is partly substituted by Mg2+ ion and contains oxide ion defects. The oxide ion defect is assumed to make some oxygen species and hydrogen from **water** , which **oxidize** methane to C2 hydrocarbons selectively. (author abst.)

2/9/27 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

15581258 PASCAL No.: 02-0282370
The role of the OH species in high-k/polycrystalline silicon gate electrode interface reactions
GOUGOUSI Theodosia; KELLY M Jason; PARSONS Gregory N
Department of Chemical Engineering, North Carolina State University, Campus Box 7905, Raleigh, North Carolina 27695
Journal: Applied physics letters, 2002-06-10, 80 (23) 4419-4421
ISSN: 0003-6951 CODEN: APPLAB Availability: INIST-10020
Document Type: P (Serial) ; A (Analytic)
Country of Publication: United States
Language: English
In this letter, reactions occurring at the interface between polycrystalline silicon (poly-Si) and LaSiO SUB x **high - dielectric - constant** (high-k) insulating layers are characterized using x-ray photoelectron spectroscopy. Dielectrics were formed by sputter deposition of metal on silicon, followed by oxidation at 900<hair thin space> Degree C. Amorphous silicon was deposited on top by plasma-enhanced chemical vapor deposition from silane, followed by anneal at 650-1050<hair thin space> Degree C. We show that if the dielectric layer is exposed to sufficient water vapor before polysilicon deposition, annealing at 1050<hair thin space> Degree C for 10 s is sufficient to completely oxidize similar 25 A of deposited silicon. Minimal reaction is observed without deliberate water exposure. This demonstrates the importance of the dielectric surface condition in determining reactivity of high-k/polysilicon interfaces. (c) 2002 American Institute of Physics.

English Descriptors: Experimental study; Silicon; Elemental semiconductors; Lanthanum compounds; Dielectric materials; Chemical interdiffusion; X-ray photoelectron spectra; Sputtered coatings; **Oxidation** ; Plasma CVD coatings; Annealing; **Water**

French Descriptors: 7784B; 8165M; 6835F; 7960J; 6172C; Etude experimentale; Silicium; Semiconducteur elementaire; Lanthane compose; Materiau dielectrique; Diffusion mutuelle chimique; Spectre photoelectron RX; Revetement pulverisation; Oxydation; Revetement PECVD; Recuit; Eau

Classification Codes: 001B70G84B; 001B80A65; 001B60H35F; 001B70I60J; 001B60A72C

2/9/28 (Item 2 from file: 144)
DIALOG(R)File 144:Pascal

15270194 PASCAL No.: 01-0440361
HF and Hydrazine Monohydrate Solution Treatment for Suppressing Oxidation of ZrN Film Surface
HORII Sadayoshi; TODA Takeo; HORITA Susumu
School of Material Science, Japan Advanced Institute of Science and Technology, 1-1 Asahidai, Tatsunokuchi, Noumi, Ishikawa 923-1292, Japan
Journal: Japanese Journal of Applied Physics Part II : Letters, 2001-09-15, 40 (9AB) L976-L979
ISSN: 0021-4922 CODEN: JAPLD8 Availability: INIST-9959

Document Type: P (Serial) ; A (Analytic)
Country of Publication: United States
Language: English

Because the surface of a ZrN film was easily oxidized even immediately after the deposition, we did not obtain heteroepitaxial Ir film on the epitaxial ZrN film. In order to remove the oxidized layer from the ZrN film and suppress the **oxidation** , we propose a novel **wet** chemical treatment using HF and hydrazine (N2H4) monohydrate solution before the Ir film deposition. From the treated ZrN film surface, the X-ray photoelectron spectroscopy (XPS) spectrum showed the decrease of the oxide signal of the Zr3d spectrum. Moreover, on the treated epitaxial (100)ZrN film on the (100)Si substrate, we obtained the (100) epitaxial Ir film.

English Descriptors: Experimental study; **Ferroelectric** thin films; Zirconium compounds; Nitrogen compounds; Oxidation; X-ray photoelectron spectra; Sputter deposition; Surface treatments

French Descriptors: 7755; 7960D; 8115C; Etude experimentale; Couche mince ferroelectrique; Zirconium compose; Azote compose; Oxydation; Spectre photoelectron RX; Depot pulverisation; Traitement surface

Classification Codes: 001B70G55; 001B70I60D; 001B80A15C

2/9/29 (Item 3 from file: 144)
DIALOG(R)File 144:Pascal

15045102 PASCAL No.: 01-0202669

A catalytic heat-exchanging tubular reactor for combining of high temperature exothermic and endothermic reactions

Frontiers in chemical reaction engineering

ISMAGILOV Z R; PUSHKAREV V V; PODYACHEVA O Yu; KORYABKINA N A; VERINGA H SANTAMARIA Jesus, ed
Boreskov Institute of Catalysis, Lavrentiev Avenue 5, 630090 Novosibirsk, Russia; ECN, PO. Box 1, 1755 ZG Petten, Netherlands

Journal: Chemical engineering journal : (1996), 2001, 82 (1-3) 355-360
ISSN: 1385-8947 Availability: INIST-14678; 354000097524120310
No. of Refs.: 9 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Netherlands
Language: English

A multifunctional catalytic heat-exchanging (HEX) tubular reactor for combining exothermic and endothermic reactions has been developed and tested for catalytic methane **oxidation** and methane **steam** reforming. The methane combustion and **steam** reforming catalysts were synthesized on the heat-conducting metal foam support materials by application of preliminary plasma spraying of alumina in order to increase adhesive properties of the active layer. The HEX rector with **perovskite** -supported catalyst on Ni-Cr foam material on the external surface of the HEX tube and with Ni containing reforming catalyst on the internal Ni foam was successfully tested in methane combustion reaction combined with methane steam reforming.

English Descriptors: Tubular reactor; Catalytic reactor; Heat exchanger; Endothermic reaction; Exothermic reaction; High temperature; Catalytic combustion; **Oxidation** ; **Steam reforming** ; Catalytic reforming; Hydrocarbon; Methane-ENT; Heterogeneous catalysis; Supported catalyst; Catalyst support; Metal foam; Titanium; Nickel; Chromium; Alumina; **Perovskite** type compound; Cobalt-ACT; Lanthanum-ACT; Preparation; Plasma spraying; Characterization; Optimization; Experimental study; Multifunctional reactor

French Descriptors: Reacteur tubulaire; Reacteur catalytique; Echangeur chaleur; Reaction endothermique; Reaction exothermique; Haute temperature

; Combustion catalytique; Oxydation; Reformage vapeur; Reformage catalytique; Hydrocarbure; Methane-ENT; Catalyse heterogene; Catalyseur sur support; Support catalyseur; Mousse metallique; Titane; Nickel; Chrome; Alumine; Perovskites; Cobalt-ACT; Lanthane-ACT; Preparation; Projection plasma; Caracterisation; Optimisation; Etude experimentale; Reacteur multifonctionnel

Classification Codes: 001D07H; 001C01A03A

2/9/30 (Item 4 from file: 144)
DIALOG(R)File 144:Pascal

14983538 PASCAL No.: 01-0137375

Study on current efficiency of steam electrolysis using a partial protonic conductor SrZr SUB 0 SUB . SUB 9 Yb SUB 0 SUB . SUB 1 O SUB 3 SUB - SUB alpha

KOBAYASHI Tetsuro; ABE Katsushi; UKYO Yoshio; MATSUMOTO Hiroshige
Toyota Central R&D Labs., Inc., Nagakute, Aichi 480-1192, Japan; Center for Integrated Research in Science and Engineering, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan

Journal: Solid state ionics, 2001, 138 (3-4) 243-251
ISSN: 0167-2738 CODEN: SSIOD3 Availability: INIST-18305; 354000094083870100
No. of Refs.: 25 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Netherlands
Language: English

The current efficiency of steam electrolysis was measured in the temperature range from 460 to 600 Degree C using a steam electrolysis cell constructed with a partial protonic conductor SrZr SUB 0 SUB . SUB 9 Yb SUB 0 SUB . SUB 1 O SUB 3 as an electrolyte and Pt cermet electrodes. The efficiency was increased with increasing partial pressure of water vapor and temperature. The results were considered in relation to the reaction rates at the anode and cathode. Under the operating conditions of steam electrolysis, the reaction rate of producing H SUB 2 from protons at the cathode was found to be faster than that of **oxidizing water** vapor into protons and O SUB 2 at the anode. Therefore, the average concentration of protons in the partial protonic conductor during electrolysis decreased. On the other hand, the average concentration of holes increased. This is considered to decrease the efficiency of steam electrolysis. It was found that the effective transport numbers of charge carriers in the partial protonic conductor were controlled by the reaction rates at the electrodes at relatively low temperatures at which the equilibria between the atmosphere and defects in the partial protonic conductor were difficult to obtain.

English Descriptors: Solid oxide fuel cell; Electrolyte; **Perovskite** ; Strontium oxide; Zirconium oxide; Ytterbium oxides; Proton conductivity; Current efficiency; Electrolysis; Water vapor

French Descriptors: Pile combustible oxyde solide; Electrolyte; **Perovskite** ; Strontium oxyde; Zirconium oxyde; Ytterbium oxyde; Conductivite protonique; Rendement courant; Electrolyse; Vapeur eau; O Sr Y Zr

Classification Codes: 001D06D03E; 230

2/9/31 (Item 5 from file: 144)
DIALOG(R)File 144:Pascal

14927331 PASCAL No. 01-0078034
Sr-doped LaCrO SUB 3 [illegible]ode for solid oxide fuel cells
PRIMDAHL S; HANSEN J R; GRAHL-MADSEN L; LARSEN P H
Risoe National Laboratory, 4000 Roskilde, Denmark; IRD A/S, 5700 Svendborg, Denmark
Journal: Journal of the Electrochemical Society, 2001, 148 (1) A74-A81
ISSN: 0013-4651 CODEN: JESOAN Availability: INIST-4925; 354000093596550110
No. of Refs.: 36 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: United States
Language: English

A number of doped lanthanum chromite perovskites are considered as anode materials for solid oxide fuel cells with an yttria-stabilized zirconia (YSZ) electrolyte operating in hydrogen at 850 Degree C. The polarization resistance is measured by impedance spectroscopy, and shown to depend significantly on the type and amount of doping. In particular, the composition La SUB 0 SUB . SUB 8 Sr SUB 0 SUB . SUB 2 Cr SUB 0 SUB . SUB 9 SUB 7 V SUB 0 SUB . SUB 0 SUB 3 O SUB 3 (LSCV) is examined in detail. Reactivity studies indicate the presence of secondary phases in LSCV. These phases are reactive toward YSZ, resulting in the formation of SrZrO SUB 3 . The secondary phases may he readsorbed during prolonged calcination under reducing conditions. The polarization resistance is shown to increase severely over a few days, and to be recoverable by temporary oxidation. The time constant of the degradation is shown not to match that of the changes in stoichiometry and conductivity during reduction of the **perovskite** . Two rate limiting processes arc generally observed. The low frequency process is suggested to relate to adsorption of hydrogen on the LSCV surface or a chemical reaction step. The high frequency process is suggested to relate to the LSCV/YSZ contact interface. LSCV does not exhibit significant catalytic activity toward **steam** reforming of methane, and shows no sign of direct methane **oxidation** .

English Descriptors: Electrochemical energy conversion; High-temperature fuel cells; Solid electrolyte fuel cells; Solid oxide fuel cell; Electrode material; Multi-element compound; Intercalation compound; Strontium oxide; Vanadium oxide; Lanthanum oxide; Chromium oxide; **Perovskite** type compound; Electrochemical characteristic; Electrochemical polarization; Ionic conductivity; Electrode impedance; Electrode capacity
Broad Descriptors: Alkaline earth metal Compounds; Transition metal Compounds; Lanthanide Compounds; Metal alcalinoterreux Compose; Metal transition Compose; Lanthanide Compose; Metal alcalino-terreo Compuesto; Metal transicion Compuesto; Lantanido Compuesto

French Descriptors: Conversion electrochimique; Pile combustible haute temperature; Pile combustible electrolyte solide; Pile combustible oxyde solide; Materiau electrode; Compose n elements; Compose insertion; Strontium oxyde; Vanadium oxyde; Lanthane oxyde; Chrome oxyde; Perovskites; Caracteristique electrochimique; Polarisation electrochimique; Conductivite ionique; Impedance electrode; Capacite electrode; La0.8Sr0.2Cr0.97V0.03O3; Cr La O Sr V

Classification Codes: 001D05I03E

2/9/32 (Item 6 from file: 144)
DIALOG(R)File 144:Pascal

14919287 PASCAL No.: 01-0069284
The crystal structures and phase transitions in Y-doped BaCeO SUB 3 : their dependence on Y concentration and hydrogen doping
TAKEUCHI K; LOONG C K; RICHARDSON J W JR; GUAN J; DORRIS S E;

BALACHANDRAN U
Intense Pulsed Neutron Source Division, Argonne National Laboratory, 9700 S. Cass Ave., Argonne, IL 60439-4814, United States; Energy Technology Division, Argonne National Laboratory, 9700 S. Cass Ave., Argonne, IL 60439-4814, United States
Journal: Solid state ionics, 2000, 138 (1-2) 63-77
ISSN: 0167-2738 CODEN: SSIOD3 Availability: INIST-18305; 354000093781500060
No. of Refs.: 40 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Netherlands
Language: English

The crystal structures and phase transitions in BaCe SUB 1 SUB - SUB 3 SUB , Y SUB x O SUB 3 SUB - SUB delta (0 <= x <=0.3) that occur in response to heat treatment in **oxidizing** , reducing, and **water** -vapor-containing atmospheres were determined by neutron powder diffraction at room temperature. Single-phase BaCe SUB 1 SUB - SUB x Y SUB x O SUB 3 SUB - SUB delta SUB (delta similar = x/2) can be synthesized by O SUB 2 -annealing samples prepared by a solid-state reaction method, wherein they crystallize into **perovskite** -type structures (orthorhombic Pmcn for x <=0.1 and rhombohedral R3c for x >= 0.15). Within the composition range of 0.15<=x<=0.25, where maximum total conductivity is observed, the rhombohedral structure converts partially to a monoclinic I2/m structure upon exposure to water- or H SUB 2 -containing atmospheres (including laboratory air) at elevated temperatures. This study may suggest a correlation between the crystal structures, particularly the I2/m phase, and the proton transport properties.

English Descriptors: Crystal structure; Phase transformations; Composition effect; Heat treatments; Controlled atmospheres; **Oxidizing** atmosphere; Reducting atmosphere; **Steam** ; Neutron diffraction; Orthorhombic lattices ; Trigonal lattices; Monoclinic lattices; Ionic conductors; Barium oxides ; Yttrium oxides; Cerium oxides; Experimental study; Quaternary compounds
Broad Descriptors: Inorganic compounds; Rare earth compounds; Transition element compounds; Compose mineral; Lanthanide compose; Metal transition compose

French Descriptors: Structure cristalline; Transformation phase; Effet composition; Traitement thermique; Atmosphere controlee; Atmosphere oxydante; Atmosphere reductrice; Vapeur eau; Diffraction neutron; Reseau orthorhombique; Reseau rhomboedrique; Reseau monoclinique; Conducteur ionique; Baryum oxyde; Yttrium oxyde; Cerium oxyde; Etude experimentale; BaCe1-xYxO3-delta; Ba Ce O Y; 6150K; 6630H; Compose quaternaire

Classification Codes: 001B60A50K; 001B60F30H

2/9/33 (Item 7 from file: 144)
DIALOG(R)File 144:Pascal

14918541 PASCAL No.: 01-0068505
Catalytic oxidation of 1,2-dichlorobenzene over ABO SUB 3 -type perovskites
Environmental catalysis
POPLAWSKI Karoline; LICHTENBERGER Janine; KEIL Frerich J; SCHNITZLEIN Klaus; AMIRIDIS Michael D
SMIRNIOTIS Panagiotis G, ed; SENKAN Selim, ed
Department of Chemical Engineering, University of South Carolina, Columbia SC 29208, United States; Technische Universitaet Hamburg-Harburg, Chair of Chemical Engineering, FSP 6-05, Eissendorferstr., 38 21071, Hamburg, Germany; Brandenburische Technische Universitaet Cottbus, Department of Chemical Reaction Engineering, Burger Chaussee, 03044 Cottbus , Germany

Chemical Engineering Department, University of Cincinnati, Cincinnati, OH 45221-0171, United States; Chemical Engineering Department, University of California, Los Angeles, CA 90024-1592, United States
American Institute of Chemical Engineers, United States
Annual AIChE Meeting (Dallas, Texas USA) 1999-11
Journal: Catalysis today, 2000, 62 (4) 329-336
ISSN: 0920-5861 CODEN: CATTEA Availability: INIST-21357; 354000093285930050
No. of Refs.: 30 ref.
Document Type: P (Serial); C (Conference Proceedings) ; A (Analytic)
Country of Publication: Netherlands
Language: English

Several ABO SUB 3 -type **perovskite** oxides (A = La, Y, Nd or Gd; B = Fe, Mn, Cr or Co) have been investigated as catalysts for the oxidation of 1,2-dichlorobenzene (o-DCB), a model compound for the highly toxic polychlorinated dibenzodioxins. Initial transient and steady state activity measurements were conducted with all catalysts in the absence and presence of water. Perovskites containing Cr in the B-site were more active than perovskites containing other transition metals, with YCrO SUB 3 being the most active catalyst among the different systems studied. Furthermore, YCrO SUB 3 did not show any loss of its initial activity after several hours on stream. Other perovskites lost 10-20% of their initial activity within the first 5-10 h on stream. This loss was associated with a corresponding loss in BET surface area. With the exception of LaCoO SUB 3 . all perovskites retained their crystalline structure upon exposure to o-DCB under reaction conditions. LaCoO SUB 3 was converted to LaOCI and Co SUB 3 O SUB 4 . The presence of water appeared to enhance the catalytic activity of some perovskites. This effect can be attributed to a faster removal of Cl SUP - ions from the catalyst surface via their reaction with water.

English Descriptors: Experimental study; Ternary compound; **Perovskite** ; Preparation; Catalytic reaction; **Oxidation** ; Benzene derivatives-ENT; Chlorocarbon; Volatile organic compound; Catalyst activity; **Water** -ENT; Active site; Heterogeneous catalysis

Broad Descriptors: Transition metal Compounds; Lanthanide compound; Group IIIB metal Compounds; Metal transition Compose; Lanthanide compose; Metal groupe IIIB Compose; Metal transicion Compuesto; Lantanido compuesto; Metal grupo IIIB Compuesto

French Descriptors: Etude experimentale; Compose ternaire; **Perovskite** ; Preparation; Reaction catalytique; Oxydation; Benzene derive-ENT; Hydrocarbure chlore; Compose organique volatil; Activite catalytique; Eau-ENT; Site actif; Catalyse heterogene; Benzene(1,2-dichloro)-ENT

Classification Codes: 001C01A03B

2/9/34 (Item 8 from file: 144)
DIALOG(R)File 144:Pascal

14521338 PASCAL No.: 00-0185502
Partial oxidation of methane to synthesis gas using Ni/Ca SUB 0 SUB . SUB 8 Sr SUB 0 SUB . SUB 2 TiO SUB 3 anode catalyst
HAMAKAWA S; SHIOZAKI R; HAYAKAWA T; SUZUKI K; MURATA K; TAKEHIRA K; KOIZUMI M; NAKAMURA J; UCHIJIMA T
National Institute of Materials and Chemical Research, Ibaraki 305-8565, Japan; Department of Applied Chemistry, Faculty of Engineering, Hiroshima University, Hiroshima 739-8527, Japan; Institute of Materials Science, University of Tsukuba, Ibaraki 305-8573, Japan
Journal: Journal of the Electrochemical Society, 2000, 147 (3) 839-844
ISSN: 0013-4651 CODEN: JESOAN Availability: INIST-4925; 354000082277470050
No. of Refs.: 30 ref.
Document Type: P (Serial) ; A (Analytic)

that the optimized composition for this electrolyte was La SUB 0 SUB . SUB 9 Sr SUB 0 SUB . 1Ga [redacted] 0 SUB . SUB 8 MgO SUB . SUB 1 [redacted] 1 5Co SUB 0 SUB . SUB 0 SUB 8 SUB 5 O SUB 3 considering the power density and the amount of oxygen leakage. Although the thickness of electrolyte with the above composition was as thick as 0.5 mm, a maximum power density and yield of synthesis gas were obtained at 242 mW/cm SUP 2 and 16%, respectively at 1073 K.

English Descriptors: Solid oxide fuel cell; **Steam** reforming; Partial **oxidation** ; Methane; Solid electrolyte; Doping; Electric power production ; Open circuit; Current density; Performance; Lanthanum oxide; Gallium oxide

French Descriptors: Pile combustible oxyde solide; Reformage vapeur; Oxydation partielle; Methane; Electrolyte solide; Dopage; Production energie electrique; Circuit ouvert; Densite courant; Performance; Lanthane oxyde; Gallium oxyde

Classification Codes: 001D06D03E; 230

2/9/37 (Item 11 from file: 144)
DIALOG(R)File 144:Pascal

13850566 PASCAL No.: 99-0027227
Catalytic hydrogenation of CO over the doped perovskite **oxide YBa SUB 2 Cu SUB 3 O SUB 7 SUB - SUB x catalysts**
DURSUN G; WINTERBOTTOM J M
School of Chemical Engineering, University of Birmingham, Birmingham B15 2TT, United Kingdom
Journal: Journal of chemical technology and biotechnology : (1986), 1998 , 73 (4) 389-397
ISSN: 0268-2575 CODEN: JCTBDC Availability: INIST-560; 354000073122350100
No. of Refs.: 21 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: United Kingdom
Language: English
Perovskite oxide structured YBa SUB 2 Cu SUB 3 O SUB 7 SUB - SUB x (YBCO) has been first prepared by carbonate precipitation and then modified with palladium or ruthenium by impregnation on the **perovskite** oxide, while cobalt was co-precipitated simultaneously in the same pH range with **perovskite** oxide. After characterization the catalysts were used in the temperature range 300-450 Degree C, in the pressure range 1-9 atmospheres and for H SUB 2 /CO ratios in the range 1-4 in a differential plug flow reactor for the hydrogenation of carbon monoxide to give hydrocarbons. The **perovskite** oxide (YBCO) 20% (w/w) and doped 2% (w/w) cobalt oxide catalyst were prepared by the **wet** chemical method from their nitrate solutions and **oxidized** at 950 Degree C. **Perovskite** oxide (Dursun, G. & Winterbottom, J. M., J. Chem. Technol Biotechnol. 63 (1995) 113-16) was also doped with palladium and ruthenium metal by impregnation followed by oxidation at 250 Degree C. The catalysts prepared were characterized by using Temperature-Programmed Reduction (TPR) to observe the reduction temperature and also to measure total and metal surface area. The modified **perovskite** oxide on alumina, ruthenium- and cobalt-doped catalysts, has been shown to give a better conversion and also selectivity towards saturated hydrocarbons compared with palladium-doped catalyst. The temperature effect of these catalysts is more consistent, giving a steady increase of conversion with increasing temperature. Although increase of pressure increases the conversion, it causes very little change in product distribution. The activation energy of palladium- and ruthenium-doped, and cobalt co-precipitated catalysts for the reaction has been measured to be 55, 75 and 50 kJ/mol respectively. A general rate equation of the form

r=k(H SUB 2) SUP m (CO) SUP n has been observed and found to be applicable at the pressures and temperatures used for the catalytic system studied and found to be m backward congruency 1.0 for palladium-doped, m backward congruency 1.2 for ruthenium-doped and m backward congruency 0.95 for cobalt co-precipitated catalysts as n becomes zero or negligibly less than zero. The mechanism of reaction to produce hydrocarbons from syngas has been deduced from the results. It appeared that the carbon monoxide insertion mechanism has been more evident for palladium-doped catalysts whereas the carbide mechanism plays the main role for the ruthenium-doped and cobalt co-precipitated catalysts.

English Descriptors: **Perovskite** type compound; Quaternary compound; Yttrium Oxides; Barium Oxides; Copper Oxides; Modified material; Doped materials; Ruthenium; Palladium; Cobalt Oxides; Supported catalyst; Alumina-SUB; Preparation; Characterization; Surface properties; Surface area; Catalyst activity; Catalyst selectivity; Hydrogenation; Carbon monoxide-ENT; Hydrogen-ENT; Catalytic reaction; Heterogeneous catalysis; Kinetics; Activation energy; Conversion rate; Medium effect; Experimental study

Broad Descriptors: Platinmetalle; Transition metal Compounds; Alkaline earth metal Compounds; Platinoid; Metal transition Compose; Metal alcalinoterreux Compose; Platinoide; Metal transicion Compuesto; Metal alcalino-terreo Compuesto; Platinoide

French Descriptors: Perovskites; Compose quaternaire; Yttrium Oxyde; Baryum Oxyde; Cuivre Oxyde; Materiau modifie; Materiau dope; Ruthenium; Palladium; Cobalt Oxyde; Catalyseur sur support; Alumine-SUB; Preparation ; Caracterisation; Propriete surface; Aire superficielle; Activite catalytique; Selectivite catalyseur; Hydrogenation; Carbone monoxyde-ENT; Hydrogene-ENT; Reaction catalytique; Catalyse heterogene; Cinetique; Energie activation; Taux conversion; Effet milieu; Etude experimentale

Classification Codes: 001C01A03A

2/9/38 (Item 12 from file: 144)
DIALOG(R)File 144:Pascal

12926088 PASCAL No.: 97-0195541

A comparative study of LaCoO SUB 3 , Co SUB 3 O SUB 4 and LaCoO SUB 3 -Co SUB 3 O SUB 4 : I. Preparation, characterisation and catalytic properties for the oxidation of CO

SIMONOT L; GARIN F; MAIRE G
67070 Strasbourg cedex, France

Journal: Applied catalysis. B, Environmental, 1997, 11 (2) 167-179
ISSN: 0926-3373 Availability: INIST-18840B; 354000063130280004
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Netherlands
Language: English Summary Language: English

 LaCoO SUB 3 , Co SUB 3 O SUB 4 and a mix of them, were synthesized and studied in the case of automotive exhaust reactions. Two preparation methods were used: simultaneous precipitation and a sol-gel type. The samples were characterised by X-ray diffraction, TPR, TPO and microanalysis. The CO **oxidation** reaction was performed under dry or **wet** atmospheres for a binary CO+O SUB 2 and a complete CO+NO+C SUB 3 H SUB 8 +O SUB 2 gas mixture. In all cases, the cobalt oxide pointed out the best performances. A quenching effect of the surface of the sol-gel catalysts induced activity at room temperature under the CO+O SUB 2 dry mixture. Under the complete wet gas mixture, the **perovskite** LaCoO SUB 3 showed a lower activation energy for the CO oxidation reaction than for Co SUB 3 O SUB 4 .

English Descriptors: Catalyst; Catalyst activity; Lanthanum Oxides-ACT;

Cobalt Oxides-ACT; Characterization; Oxidation; Mixed catalyst; X ray diffraction; Muffler catalytic muffler; Experimental study; Carbon monoxide-ENT; Binary compound; Ternary compound; Comparative study; Heterogeneous catalysis

Broad Descriptors: Transition metal Compounds; Lanthanide Compounds; Metal transition Compose; Lanthanide Compose; Metal transicion Compuesto; Lantanido Compuesto

French Descriptors: Catalyseur; Activite catalytique; Lanthane Oxyde-ACT; Cobalt Oxyde-ACT; Caracterisation; Oxydation; Catalyseur mixte; Diffraction RX; Pot echappement; Pot catalytique; Etude experimentale; Carbone monoxyde-ENT; Compose binaire; Compose ternaire; Etude comparative; Catalyse heterogene; LaCoO3; Co La O; Co3O4; Co O

Classification Codes: 001C01A03A

2/9/39 (Item 13 from file: 144)

12842836 PASCAL No.: 97-0062662

Partial oxidation of methane for internally reformed solid oxide fuel cell

Solid state ionics - 95. Part II

HIEI Y; ISHIHARA T; TAKITA Y
CHOWDARI B V R, ed
Department of Applied Chemistry, Faculty of Engineering, Oita University, Dannoharu 700, Oita 870-11, Japan
Department of Physics, National University of Singapore, Singapore 119260, Singapore

International Conference on Solid State Ionics - SSI, 10 (Singapore SGP) 1995-12-03
Journal: Solid state ionics, 1996, 86-88 (PART2) 1267-1272
ISSN: 0167-2738 CODEN: SSIOD3 Availability: INIST-18305; 354000066795430910
No. of Refs.: 7 ref.
Document Type: P (Serial); C (Conference Proceedings) ; A (Analytic)
Country of Publication: Netherlands
Language: English

Internally reformed solid oxide fuel cells (SOFC) where partial oxidation of methane was used as the reforming reaction were investigated. The electrical power generated as well as the activity for the partial oxidation of methane are strongly dependent on the oxide ion conductivity of the electrolyte used. Among the oxide ion conductors examined, **perovskite** oxide of LaGaO SUB 3 doped with Sr and Mg gives the highest electrical power, and a gaseous mixture of CO and H SUB 2 at the molar ratio of 2 was obtained. When La SUB 0 SUB . SUB 9 Sr SUB 0 SUB . SUB 1 Ga SUB 0 SUB . SUB 8 Mg SUB 0 SUB . SUB 2 O SUB 3 , Ni, and La SUB 0 SUB . SUB 6 Sr SUB 0 SUB . SUB 4 CoO SUB 3 were used as electrolyte, anode, and cathode, respectively, and the gaseous mixture of CH SUB 4 /O SUB 2 = 4 was fed, the electrical power density and yield of synthesis gas consisting of CO and H SUB 2 attained was 336 mW cm SUP - SUP 2 and 70%, respectively. The electrical power as well as the CH SUB 4 conversion was stably sustained over a 30 h examination.

English Descriptors: Solid oxide fuel cell; Methane; **Steam** reforming; Partial **oxidation** ; Ionic conductivity; **Perovskite** type compound; Synthesis gas; Carbon monoxide; Hydrogen; Zirconium Oxides; Cerium Oxides

French Descriptors: Pile combustible oxyde solide; Methane; Reformage vapeur; Oxydation partielle; Conductivite ionique; Perovskites; Gaz synthese; Carbone monoxyde; Hydrogene; Zirconium Oxyde; Cerium Oxyde; Ga La Mg O Sr; Co La O Sr

Classification Codes: 006D03E; 230

2/9/40 (Item 14 from file: 144)
DIALOG(R)File 144:Pascal

12438315 PASCAL No.: 96-0094635
Oxidative coupling of methane by water as the oxidant on perovskite **oxide catalysts**
LI K; TOMISHIGE K; FUJIMOTO K
Univ. Tokyo, fac. eng., dep. applied chemistry, Bunkyo-ku, Tokyo 113, Japan
Journal: Catalysis letters, 1996, 36 (1-2) 21-24
ISSN: 1011-372X Availability: INIST-21739; 354000052153070040
No. of Refs.: 14 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Switzerland
Language: English
We found that methane was selectively **oxidized** by **water** to give C SUB 2 hydrocarbons and hydrogen on ATi SUB 1 SUB - SUB x B SUB x O SUB 3 SUB - SUB delta (A = Sr, Ba, B = Mg, Ca). The coupling activity and selectivity on SrTi SUB 0 SUB . SUB 4 Mg SUB 0 . SUB 6 M SUB 3 SUB - SUB delta in the presence of steam was similar 95%, which was much higher than that on pure SrTiO SUB 3 . This suggests that the selective oxidative coupling of methane by water was catalyzed by the oxide ion defects on ATi SUB 1 SUB - SUB x B SUB x O SUB 3 SUB - SUB delta (A = Sr, Ba, B = Mg, Ca).
English Descriptors: Experimental study; Catalytic reaction; Oxidative coupling; Hydrocarbon; Methane-ENT; Water-ENT; Catalyst; **Perovskite** type compound; Steam; Titanium Oxides-ACT; Selectivity; Multi-element compound; Heterogeneous catalysis
Broad Descriptors: Transition metal Compounds; Alkaline earth metal Compounds; Metal transition Compose; Metal alcalinoterreux Compose; Metal transicion Compuesto; Metal alcalino-terreo Compuesto

French Descriptors: Etude experimentale; Reaction catalytique; Copulation oxydante; Hydrocarbure; Methane-ENT; Eau-ENT; Catalyseur; Perovskites; Vapeur eau; Titane Oxyde-ACT; Selectivite; Compose n elements; Catalyse heterogene

Classification Codes: 001C01A03B

2/9/41 (Item 15 from file: 144)
DIALOG(R)File 144:Pascal

11081662 PASCAL No.: 93-0588682
Perovskite **anode electrocatalysis for direct methanol fuel cells**
WHITE J H; SAMMELLS A F
Eltron Research Inc., Boulder CO 80301, USA
Journal: Journal of the Electrochemical Society, 1993, 140 (8) 2167-2177
ISSN: 0013-4651 CODEN: JESOAN Availability: INIST-4925; 354000035521640110
No. of Refs.: 55 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: USA
Language: English
This investigation explores direct methanol fuel cells incorporating **perovskite** anode electrocatalysts. Preliminary electrochemical performance was addressed following incorporation of electrocatalysts into polymer electrolyte (Nafion 417) fuel cells. **Perovskite** electrocatalysts demonstrating activity towards direct methanol oxidation during cyclic

voltammetry measurements included, respectively, SrRu SUB 0 SUB . SUB 5 Pt SUB 0 SUB . SUB 5 O SUB 3 , SrRu SUB 0 SUB . SUB 5 Pd SUB 0 SUB . SUB 5 O SUB 3 , SrPdO SUB 3 , SmCoO SUB 3 , SrRuO SUB 3 , La SUB 0 SUB . SUB 8 Ce SUB 0 SUB . SUB 2 CoO SUB 3 3, SrC SUB 0 SUB . SUB 5 Ti SUB 0 SUB . SUB 5 O SUB 3 , and La SUB 0 SUB . SUB 8 Sr SUB 0 SUB . SUB 3 CoO SUB 3 where SrRiu SUB 0 SUB . SUB 5 Pt SUB 0 SUB . SUB 5 O SUB 0 SUB . SUB 3 gave methanol oxidation currents up to 28 mA/cm SUP 3 at 0.45 V vs. SCE

English Descriptors: Experimental study; Electrocatalysis; **Oxidation** ; Methanol-ENT; Alcohol; Electrodes; Catalyst; **Perovskite** ; **Water** ; Gas phase; Polarization; Cyclic voltammetry; Fuel cell
Broad Descriptors: Organische Verbindung; Organic compounds; Inorganic compound; Compose organique; Compose mineral; Compuesto organico; Compuesto inorganico

French Descriptors: Etude experimentale; Electrocatalyse; Oxydation; Methanol-ENT; Alcool; Electrode; Catalyseur; **Perovskite** ; Eau; Phase gazeuse; Polarisation; Voltammetrie cyclique; Pile combustible

Classification Codes: 001C01H05

2/9/42 (Item 16 from file: 144)
DIALOG(R)File 144:Pascal

10774901 PASCAL No.: 93-0284254
Photocatalysis on fine powders of perovskite **oxides**
Perovskite **oxides**
KUTTY T R N; AVUDAITHAI M
TEJUCA L G, ed; FIERRO J L G, ed
Indian inst. sci., dep. inorganic physical chemistry, Bangalore 560 012, India
CSIC, inst. catalysis petrochemistry, 28049 Madrid, Spain
Journal: Catalysis reviews. Science and engineering, 1992, 34 (4) 373-389
ISSN: 0161-4940 CODEN: CRSEC9 Availability: INIST-13954; 354000037948160060
No. of Refs.: 30 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: USA
Language: English

English Descriptors: Review; Photocatalysis; **Perovskite** type compound; Semiconductor materials; Strontium Titanium Oxides Mixed-ACT; **Oxidation** ; Hydrogen-FIN; Acetone-FIN; **Water** -ENT; Secondary alcohol; Chemical reduction; Carbon dioxide-ENT; Ammonia; Chemical decomposition; Isotope exchange
Broad Descriptors: Alkaline earth metal Oxides; Transition metal Oxides; Metal alcalinoterreux Oxyde; Metal transition Oxyde; Metal alcalino-terreo Oxido; Metal transicion Oxido

French Descriptors: Article synthese; Photocatalyse; Perovskites; Semiconducteur; Strontium Titane Oxyde Mixte-ACT; Oxydation; Hydrogene-FIN; Acetone-FIN; Eau-ENT; Alcool secondaire; Reduction chimique; Carbone dioxyde-ENT; Ammoniac; Decomposition chimique; Echange isotopique; Propan-2-ol

Classification Codes: 001C01F01

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Intermediate temperature electrochemical Claus process for sulphur recovery

SAMMELLS A F; PATEL J; OSBORNE J; COOK R L
Eltron Research Inc., Boulder CO 80301, USA

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We address an electrochemical Claus cell incorporating **perovskite** solid electrolytes and potentially H SUB 2 S tolerant metal sulphide anode electrocatalysts for promoting H SUB 2 S **oxidation** to sulphur and **water** . Cells possessed the general configuration: H SUB 2 S, AB SUB 2 S SUB 4 (or WS SUB 2)-doped ABO SUB 3 -La SUB 0 SUB . SUB 9 Sr SUB 0 SUB . SUB 1 CoO SUB 3 , O SUB 2 , where AB SUB 2 S SUB 4 corresponded to NiFe SUB 2 S SUB 4 and CuCo SUB 2 S SUB 4 and ABO SUB 3 to the **perovskite** solid electrolytes BaTh SUB 0 SUB . SUB 9 Gd SUB 0 SUB . SUB 1 O SUB 3 and BaCe SUB 0 SUB . SUB 9 Gd SUB 0 SUB . SUB 1 O SUB 3 . These latter components were selected from reasoning that has shown correlation between activation energy E SUB a for ionic conduction and **perovskite** solid-state lattice parameters. For oxygen-anion or proton-conducting solid electrolytes water, as an electrochemical reaction product, would be formed in anode and cathode compartements respectively. The predominant oxidizable electroactive species present in the anode compartment was suggested to be hydrogen originating from the initial thermal dissociation of H SUB 2 S at operating temperatures. The empirical trend for exchange current densities suggests relative activities for promoting the subject reaction in the cell anode compartment to be NiFe SUB 2 S SUB 4 >WS SUB 2 >CuCo SUB 2 S SUB 4 . To avoid condensation of sulphur on anode electrocatalysts, cell should be operated at above 700 Degree C